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Four years of the Finnish Allergy Programme 2008-2018

We can reduce the burden

Background

The prevalence of allergic diseases has grown in Finland during the last 50 years, like in many other industrialised and urbanised countries. Although the origin of allergy remains unresolved, increasing body of evidence indicates that the modern man living in urban built environment is deprived from environmental protective factors (e.g. soil micro-organisms) that are fundamental for normal tolerance development. Reduced contact of people with natural, biodiverse environments may adversely affect the human commensal microbiota and its immunomodulatory capacity. Recent results from North Karelian teenagers have prompted the socalled **biodiversity hypothesis**, which enlarges the hygiene and microbial deprivation hypotheses by taking into account the interrelationships of 3 DNA compartments: human cells, skin-mucosal microbiomes and environmental microbiomes[1-3]. The current dogma of allergen avoidance has not proved effective in halting the "allergy epidemic", although allergen avoidance is, and will stay, in the treatment armamentarium of individual patients. It is the Finnish consensus that restoring and strengthening **tolerance** is the key to a better immune balance and should be more in focus. Understanding the mechanisms of tolerance also paves the way from treatment to prevention and better public health.

Goals

The 10-year implementation programme[4,5] is aimed to reduce the burden of allergies both at individual and societal levels. The main goals are to: 1) prevent the development of allergic symptoms; 2) increase tolerance against allergens; 3) improve the diagnostic quality; 4) decrease work-related allergies; 5) allocate resources to manage and prevent asthma and allergy attacks and 6) decrease costs due to allergic diseases. The goals are also numeric, e.g. asthma emergency visits should drop 40% in 10 years.

Methods

For each goal, specific tasks, tools and evaluation methods are defined. As an example of recent tools, practical recommendations for the **childhood allergies** were published in March 2012[6,7]. Mild allergic symptoms are very common and should not be treated unnecessarily. Mild allergy is not predestined to become more severe along time. The outcome is generally favourable[8]. Severe forms of allergy are in special focus. To help patients proactively to stop attacks and exacerbations of **severe allergies**, simple self-management plans have been launched for: 1) allergic rhinitis, 2) anaphylaxis, 3) asthma, 4) asthma in small children, 5) atopic eczema, 6) food allergy and 7) urticaria. The patients are trained in **guided self-management**. **Disease control** is strongly emphasised and both healthcare personnel and patients are being educated. The allergic inflammation is treated effectively from the very beginning (hitting early and hitting hard) also in other conditions than asthma, like in atopic dermatitis[9]. The importance of patient follow-

up and long-term maintenance therapy is stressed. For children with mild persistent asthma (the majority!), a strategy of **intermittent (periodic) treatment** has been developed[10]. Immunotherapy and especially **SLIT** is advocated, where feasible. Food allergy diets are critically re-evaluated and stopped, if possible. Specific oral tolerance induction (SOTI) for milk, wheat and peanut has been studied intensively and employed increasingly in clinical practice[11]. Long avoidance lists of allergens or irritants have been dropped. Avoidance must be based on proper diagnostic work and must be precise: what is avoided and for how long? In patients with troublesome food allergies, a clear shift from passive avoidance to active treatment has been taken.

Nationwide implementation acts through the network of local public health **coordinators** (GPs, nurses, pharmacists). In addition, 3 non-governmental organisations (NGOs) have in 2011 started a 4-year project to implement the new recommendations among allergic people and the general public. The 21 central hospital districts are carrying out a **3-step educational process**: 1) 2-hour programme launch sessions for opinion leaders, coordinators and educators of NGOs, 2) educational sessions in large health centres and 3) 1-day courses in central hospitals for local healthcare personnel. In 2008-2012, the Finnish Lung Health Association (Filha) has organised 150 educational events with more than **9,000 participants** (25% physicians, 50% nurses, 10% pharmacists, 15% others). The main themes have been: allergy-free child, anaphylaxis, food allergy, improving tolerance and asthma. 8 allergy testing centres have been audited for good diagnostic practice and given a certificate.

Outcomes

For outcome evaluation, **healthcare registers** have been established with repeated surveys being performed at the beginning, at 5 years and at the end of the programme. The messages of the programme have been well received by healthcare personnel[12], and attitudes are changing. For example, GPs gave the message of improving tolerance a score of 9.1 on a scale of 4-10. In an internet-based **Gallup survey**, allergic people gave the best score to the message "Support health, not allergy" and only 12% agreed with the claim "Avoidance is the best strategy to combat allergy"[13]. Emergency visits and hospital days caused by asthma are in steady decline (54% during the last 10 years), but to reduce them further, risk group thinking is needed[14]. The small children and especially women 60 years or older should be put in focus. Anaphylaxis emergency visits have even increased, which may be a result of improved education and awareness. The differences in asthma and anaphylaxis visits are large between different regions of the country, which probably tells more of the variable healthcare practices than of true differences in occurrence[15]. Asthma seems to become a milder disease or better controlled, according to a **pharmacy barometer survey**: 10% of asthmatics evaluated their disease as severe in 2001, while the corresponding figure was 4% in 2010[16].

Conclusion

The Finnish initiative is a comprehensive plan to change the course of allergy in the society. This is done by increasing both immunological and psychological tolerance and changing attitudes to support health, not allergy. Early and effective treatment of severe allergies

is strongly emphasised. Guided self-management is the key to proactively stopping attacks. The preliminary results are promising. Several healthcare indicators are showing that the allergy burden is levelling off in Finland and even decreasing.

The Finnish Allergy Programme, or parts of it, is associated with the World Allergy Organization (**WAO**)[17], the Global Initiative for Asthma (**GINA**)[18] and the **WHO/ GARD** (Global Alliance against Chronic Respiratory Diseases). The programme is developed further and enlarged along with an EU-funded project: the MeDALL (Mechanisms of Development of Allergy)[19]. A Norwegian allergy programme is under construction, which with together the Finnish programme, will make up a model for others to modify and improve to meet their special needs.

It is time to re-evaluate the **allergy paradigm** and implement new kinds of actions, when allergic individuals are becoming a majority of Western populations and their numbers are increasing worldwide[17]. National and local action plans with clear targets are needed to meet the challenge. They do work[20]. Allergy is a community problem requiring community actions.

References

1. Laatikainen T *et al.* Allergy gap between Finnish and Russian Karelia on increase. *Allergy* 2011;66:886-92
2. von Hertzen L *et al.* Natural immunity. Biodiversity loss and inflammatory diseases are two global megatrends that might be related. *EMBO Rep* 2011;12:1089-93
3. Hanski I *et al.* Environmental biodiversity, human microbiota and allergy are interrelated. *Proc Natl Acad Sci USA* 2012;109:8334-9
4. Haahtela T *et al.* Finnish Allergy Programme 2008-2018 – time to act and change the course. *Allergy* 2008;63:634-45
5. von Hertzen L *et al.* Scientific rational for the Finnish Allergy Programme 2008-2018: emphasis on prevention and endorsing tolerance. *Allergy* 2009;64:678-701
6. Pelkonen AS *et al.* Allergy in children: practical recommendations of the Finnish Allergy Programme 2008-2018 for prevention, diagnosis, and treatment. *Pediatr Allergy Immunol* 2012;23:103-16
7. Mäkelä MJ *et al.* The challenge of relaying the right public health message in allergy. *Pediatr Allergy Immunol* 2012;23:102
8. Teppo H *et al.* Allergic rhinitis and asthma have generally good outcome and little effect on quality of life – a 10-year follow-up. *Allergy* 2011:66:1123-5
9. Reitamo S *et al.* Hit early and hit hard in atopic dermatitis and not only in asthma. *Allergy* 2009;64:503-4
10. Turpeinen M *et al.* Continuous versus intermittent inhaled corticosteroid (budesonide) for mild persistent asthma in children – not too much, not too little. *Thotax* 2012;67:100-2
11. Mäkelä M *et al.* Food hyposensitization – new approach and treatment for food allergies. *Duodecim* 2011;127:1263-71 (in Finnish)
12. Kauppi P *et al.* Finnish Allergy Programme clearly necessary – training and tools needed. *Suom Lääkäril* (Finnish medical journal) 2010:43: 3515-20 (in Finnish, abstract in English)
13. Saarinen K *et al.* Internet-based survey among allergic people. *Allergia & Astma* 2011 (in Finnish)
14. Kauppi P *et al.* Follow-up of the Finnish Asthma Programme 2000-2010: reduction of hospital burden needs risk group rethinking. *Thorax* 2012 (epub ahead of print)
15. Kauppi P *et al.* Hospital treatment and emergency visits as quality indicators. *Suom Lääkäril* (Finnish medical journal) 2010; 43:3497-3502 (in Finnish, abstract in English)
16. Kauppi P *et al.* Pharmacy allergy barometer survey 2012, manuscript in preparation
17. World Allergy Organization (WAO) White Book on Allergy. Eds. Pawankar R, Canonica GW, Holgate ST, Lockey RF. *WAO* 2011
18. Boulet LP *et al.* A guide to the translation of the Global Initiative for Asthma (GINA) strategy into improved care. *Eur Respir J* 2012; 39:1220-9
19. Bousquet J *et al.* MeDALL (Mechanisms of the Development of ALLergy): an integrated approach from phenotypes to systems medicine. *Allergy* 2011;66:596-604
20. Kupczyk M *et al.* Reduction of asthma burden is possible through National Asthma Plans. *Allergy* 2010;65:415-9